Please amend the subject application as follows:

In the claims:

Please cancel claims 1, 4-5, 7-8, 11-12, 14-15, and 59-73 without disclaimer or prejudice to applicants' right to pursue the subject matter of these claims in a future continuation or divisional application.

Please add new claims 74-92 as follows:

74. (New) A method for sequencing DNA which comprises:

(a) treating the DNA with a mixture comprising an oligonucleotide primer, a DNA polymerase, four different deoxynucleotides, and four different labeled dideoxynucleotides, under conditions permitting a deoxynucleotide or a labeled dideoxynucleotide or both to be incorporated into a DNA sequencing fragment, wherein each different deoxynucleotide and each different labeled dideoxynucleotide is complementary to one of the four nucleotides present in the DNA, wherein each labeled dideoxynucleotide comprises a chemical moiety attached via a linker to the dideoxynucleotide; and wherein each of the four different labeled dideoxynucleotides has a molecular weight which can be distinguished from the molecular weight of the other three labeled dideoxynucleotides using mass spectrometry;

(b) generating a plurality of DNA sequencing fragments having different lengths that are terminated with the labeled dideoxynucleotides so as to generate a plurality of different labeled DNA sequencing fragments, wherein each DNA sequencing fragment has a 3' end and the chemical moiety is attached via the linker to the 3' end of the DNA sequencing fragment;

(c) contacting the labeled DNA sequencing fragments with a surface coated with a compound that specifically interacts with the chemical moiety attached via the linker to the 3' end of the DNA sequencing fragments, thereby capturing the labeled DNA sequencing fragments on the surface;

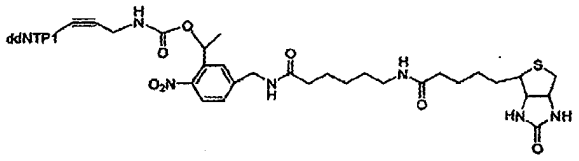
(d) washing the surface to remove non-bound components;

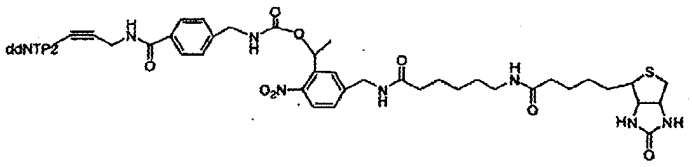
(e) treating the labeled DNA sequencing fragments so as to release the labeled DNA sequencing fragments from the surface; and

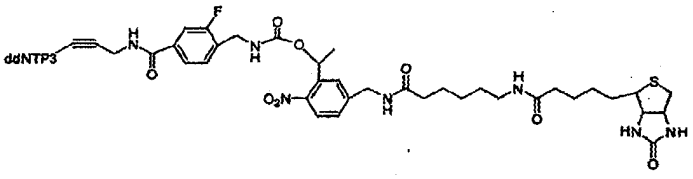
(f) determining the difference in molecular weight between different labeled DNA sequencing fragments which are represented as adjacent peaks on a mass spectra of the labeled DNA sequencing fragments produced using mass spectrometry, so as to sequence the DNA;

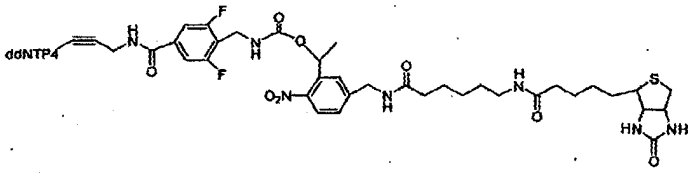
wherein either

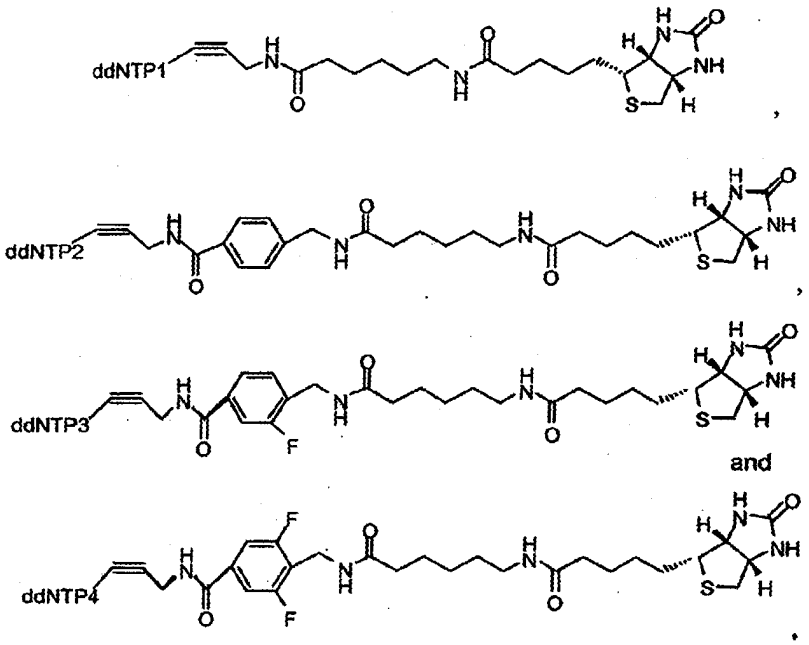
(i) the labeled dideoxynucleotides are biotinylated dideoxynucleotides selected from the group consisting of


ddNTP1
O_2N
HN
NH
O
S


ddNTP2
O_2N
HN
NH
O
S

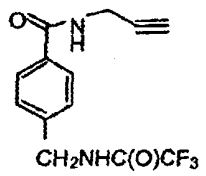

ddNTP3
F
O_2N
HN
NH
O
S

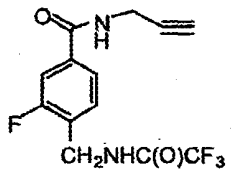

ddNTP4
F
F
O_2N
HN
NH
O
S



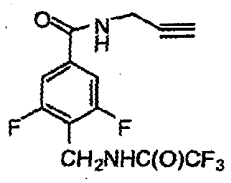
where ddNTP1, ddNTP2, ddNTP3, and ddNTP4 represent four different dideoxynucleotides; or

(ii) the linker is selected from the group consisting of





and



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--75. (New) The method of claim 74, wherein the interaction between the chemical moiety attached via the linker to the DNA sequencing fragment and the compound on the surface is selected from the group consisting of a biotin-streptavidin interaction, a phenylboronic acid-salicylhydroxamic acid interaction, and an antigen-antibody interaction.--

--76. (New) The method of claim 74, wherein the dideoxynucleotide comprises a cytosine or a thymine with a 5-position, or an adenine or a guanine with a 7-position, and the linker is attached to the 5-position of cytosine or thymine or to the 7-position of adenine or guanine.--

--77. (New) The method of claim 74, wherein the linker comprises a derivative of 4-aminomethyl benzoic acid containing a carbon-carbon triple bond.--

--78. (New) The method of claim 77, wherein the linker comprises one or more fluorine atoms.--

--79. (New) The method of claim 74, wherein the step of releasing the DNA sequencing fragments from the surface comprises disrupting the interaction between the chemical moiety attached via the linker to the DNA sequencing fragments and the compound on the surface.--

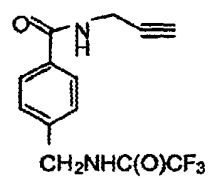
--80. (New) The method of claim 79, wherein the interaction is disrupted by a means selected from the group consisting of one or more of a physical means, a chemical means, a physical chemical means, heat, and light.--

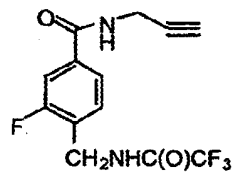
--81. (New) The method of claim 74, wherein the step of releasing the DNA sequencing fragments from the surface comprises cleaving the linker.--

--82. (New) The method of claim 81, where the linker is cleaved by a means selected from the group consisting of one or more of a physical means, a chemical means, a physical chemical means, heat, and light.--

--83. (New) The method of claim 82, wherein the linker is cleaved by light.--

--84. (New) The method of claim 74, wherein the linker is selected from the group consisting of





and

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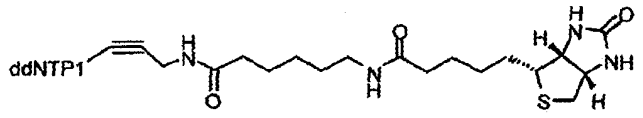
--85. (New) The method of claim 74, wherein a plurality of different linkers is used to increase mass separation between different labeled DNA sequencing fragments and thereby increase mass spectrometry resolution.--

--86. (New) The method of claim 74, wherein the chemical moiety comprises biotin, the labeled dideoxynucleotides are biotinylated dideoxynucleotides, the labeled DNA sequencing fragments are biotinylated DNA sequencing fragments, and the surface is a streptavidin-coated solid surface.--

--87. (New) The method of claim 86, wherein the biotinylated dideoxynucleotides are selected from the group consisting of:



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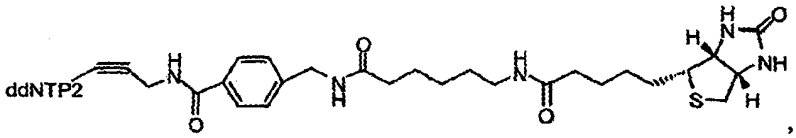

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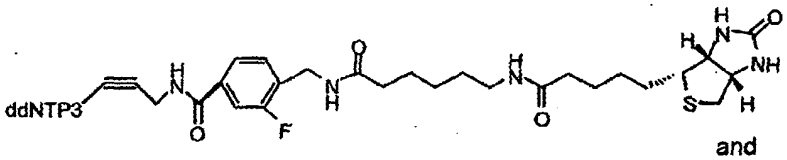

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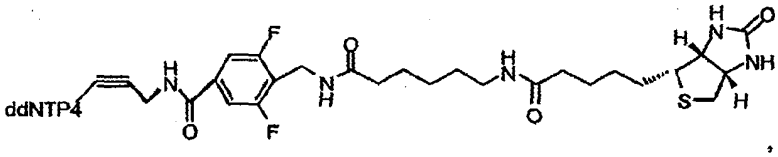
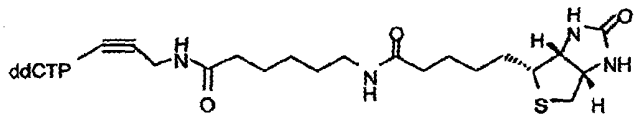


,

wherein ddNTP1, ddNTP2, ddNTP3, and ddNTP4 represent four different dideoxynucleotides.--

--88. (New) The method of claim 87, wherein the biotinylated dideoxynucleotides are selected from the group consisting of:



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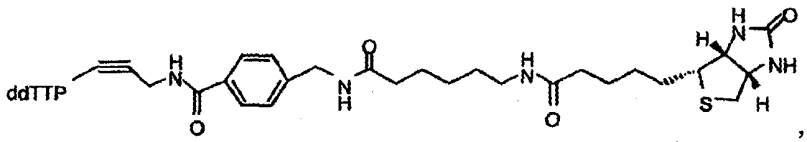

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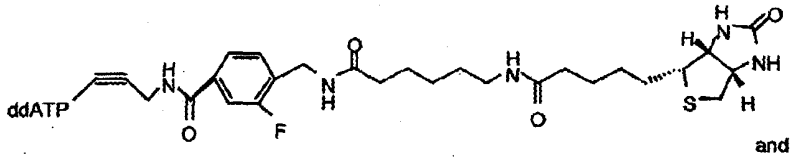
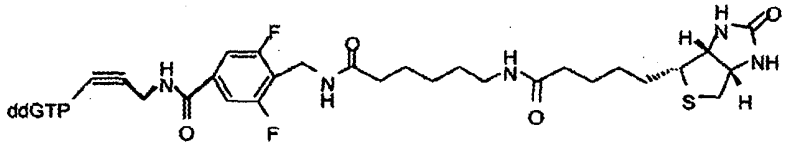


and



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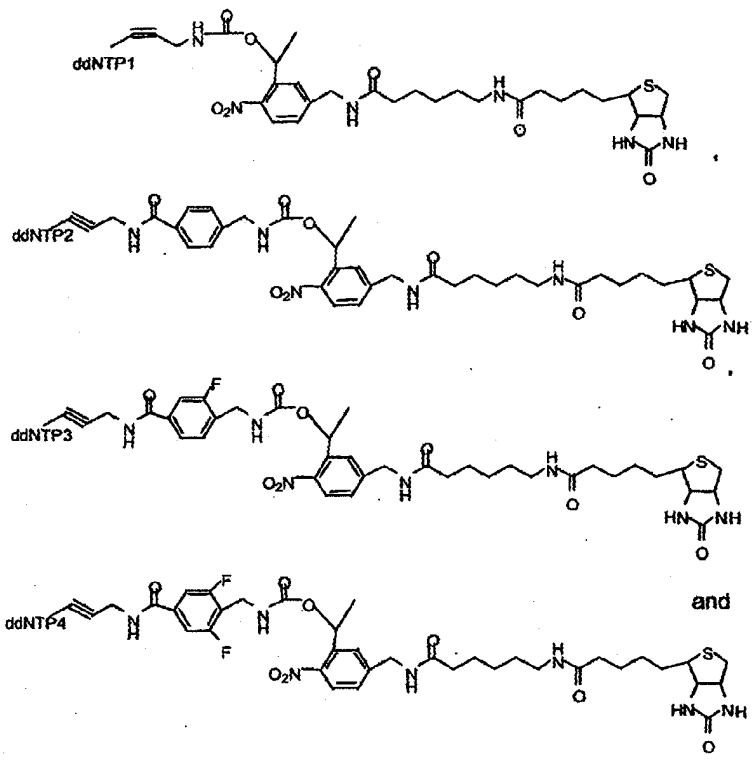
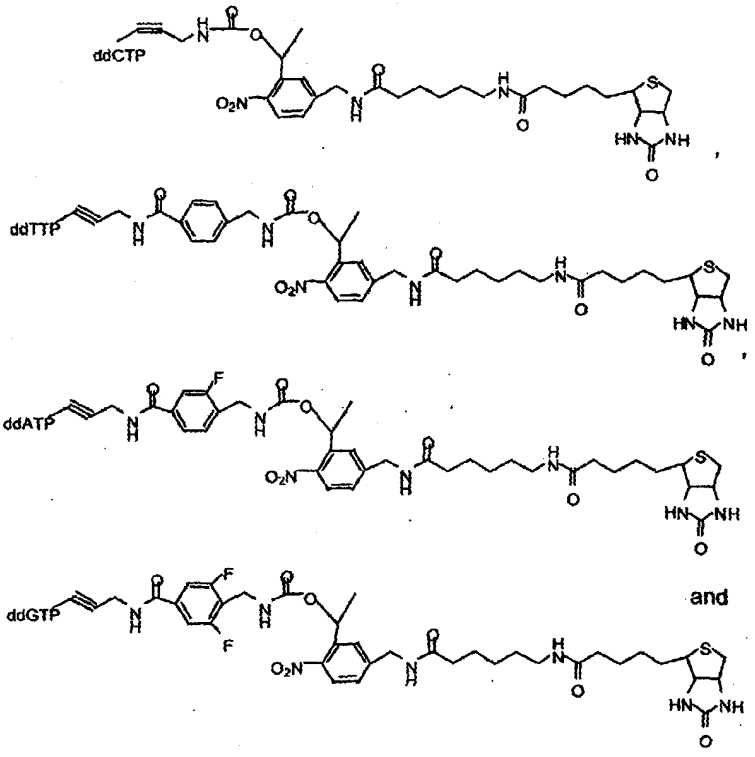
--89. (New) The method of claim 86, wherein the biotinylated dideoxynucleotides are selected from the group consisting of:



wherein ddNTP1, ddNTP2, ddNTP3, and ddNTP4 represent four different dideoxynucleotides.--

--90. (New) The method of claim 89, wherein the biotinylated dideoxynucleotides are selected from the group consisting of:



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--91. (New) The method of claim 86, wherein the streptavidin-coated solid surface is a streptavidin-coated magnetic bead or a streptavidin-coated silica glass.--

--92. (New) The method of claim 74, wherein steps (a) to (e) are performed in a single container or in a plurality of